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QUERY CONTROL FORM				RTIS USE ONLY	
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JACKET			
a. Serial No.	f. Foreign Priority	k. Print Claim(s)	p. PTO-1449
b. Applicant(s)	g. Disclaimer	l. Print Fig.	q. PTOL-85b
c. Continuing Data	h. Microfiche Appendix	m. Searched Column	r. Abstract
d. PCT	i. Title	n. PTO-270/328	s. Sheets/Figs
e. Domestic Priority	j. Claims Allowed	o. PTO-892	t. Other

SPECIFICATION

a. Page Missing
b. Text Continuity
c. Holes through Data
d. Other Missing Text
e. Illegible Text
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g. Brief Description
h. Sequence Listing
i. Appendix
j. Amendments
k. Other

CLAIMS

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f. Punctuation
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RESPONSE

2) 3) & 4): All printed from IFW.

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MOLECULAR SCALE ELECTRONIC DEVICES

Technical Field

This invention relates to electronic devices and methods of making them, and more particularly to such devices and methods utilizing conductive organic materials.

Background

Chemically-assembled electronic devices can serve as extensions of conventional circuits and devices. Such chemically-assembled devices include nanoscale or molecular scale electronic components. Molecular scale systems can offer distinct advantages in uniformity of structure and potentially lowered fabrication costs. Additionally, these molecular components can offer the advantage of ease of synthesis and the ability to create large varieties of structure by the use of facile chemical transformations.

Summary

The invention is based on the fabrication of molecular scale electronic devices, and the incorporation of such devices in useful circuits and components. The molecular scale electronic devices include an active reduction-oxidation center, which serves as a key element in the devices' exhibition of large negative differential resistance (NDR), including room temperature NDR, large peak to valley ratios, and switchable conductive states. The molecular scale electronic devices can operate as memory devices by storing high or low conductivity states. The devices are writeable, readable, and erasable.

In one aspect, the invention provides an electronic device including at least two contacts, and a monolayer of conductive organic material forming a conductive path between the contacts. The conductive path includes at least one electron withdrawing group, which can be cyano, isocyano, nitro, sulfonyl, β-carboxyvinyl, sulfinyl, β,β-dicyanovinyl, halogenated alkyl, formyl, carboxyl, carbonyl, alkyloxycarbonyl and aryloxycarbonyl, 1-tetrazolyl, 5-chloro-1-tetrazolyl, carbamoyl, or sulfamoyl, preferably cyano, isocyano and nitro. The device can exhibit high and low conductivity states and can be made repeatedly switchable between the high and said low conductivity states. The low conductivity state can a current of less than about 100 pA or less than about 1 pA.

JBH 2-11-04

This application is a continuation-in-part of 09/527885 filed 3/20/2000, now abandoned. This application claims benefit of provisional application 60/154716 filed on 4/20/99 and 60/157149 filed on 9/30/99.